

CLAIMS

1. A coupling assembly for sealing an interface between a pipe and a sump wall, the assembly comprising;
 - a sleeve configured to be inserted in an aperture in a sump wall and having a bore suitable for receiving a collar;
 - a collar configured to be received between the sleeve and the pipe, being fusible with the pipe and having a stepped internal diameter for receiving a swaging bung,
 - a swaging bung configured to be received in the stepped portion of the internal diameter of the collar and configured to receive a pipe;
 - at least one flanged washer having a diameter sized to fit the outside diameter of the sleeve and comprising at least in part a material which is leak tight bondable to the material of the sump wall.
2. A coupling assembly as claimed in claim 1 wherein the sleeve comprises a metal.
3. A coupling assembly as claimed in claim 1 or 2 wherein the sleeve has in diametrical cross section along its inner surface one or more circumferentially arranged, longitudinally extending undulations.
4. A coupling assembly as claimed in claim 1, 2 or 3 wherein the flanged washer comprises a metal washer element and a matting of leak tight bondable material which can be positioned over the washer and sleeve to form the flanged portion of the washer.
5. A coupling assembly as claimed in claim 1, 2 or 3 wherein the flanged washer comprises a unitary piece of leak tight bondable material.

6. A coupling assembly as claimed in any preceding claim further comprising an O-ring seated in an O-ring groove provided on an inner surface of the sleeve.
7. A coupling assembly as claimed in any preceding claim wherein the collar comprises a thermoplastic material.
8. A coupling assembly as claimed in claim 7 wherein the collar further includes an electro-fusion wire embedded in the thermoplastic material.
9. A coupling assembly as claimed in claim 7 wherein the collar further includes an induction heating coil embedded in the thermoplastic material.
10. A coupling assembly as claimed in any preceding claim wherein the leak proof bondable material comprises the same material as a sump to which it is intended to be bonded.
11. A coupling assembly as claimed in any preceding claim wherein the leak proof bondable material comprises a fibre reinforced plastic, optionally a glass reinforced plastic (GRP).
12. A coupling assembly as claimed in any preceding claim wherein the leak proof bondable material is impregnated or coated with a bonding resin.
13. A coupling assembly as claimed in any preceding claim including two flanged washers.

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14. A coupling assembly as claimed in claim 13 wherein the second washer is provided in a floating configuration so that it can be correctly positioned and secured in position on site.
15. A coupling assembly as claimed in claim 14 wherein the second washer has associated therewith a mechanical locking device.
16. A coupling assembly as claimed in claim 15 wherein the mechanical locking device comprises a thread on the outer diameter of the sleeve and a complimentary flange nut for screwing onto the flange.
17. A coupling assembly as claimed in any preceding claim wherein the assembly comprises a pair of collars, one of the pair being insertable in each of two opposing ends of the sleeve with the stepped portions of the collars arranged face to face and a common swaging bung configured to fit between the two collars.
18. A coupling assembly substantially as described herein and with reference to Figures 2a), b) and c) and 3.
19. A coupling assembly substantially as described herein and with reference to Figures 4a) and 4b)
20. A method for sealing an interface between a pipe and a sump wall comprising;
 - providing a coupling assembly as claimed in any preceding claim;
 - inserting the sleeve through an aperture of the sump;
 - inserting the collar(s) into the sleeve from the end furthest from the undulations;
 - inserting the bung into the stepped portion(s);

slipping the or each flanged washer over the sleeve to rest against a surface of a wall of the sump;

inserting the pipe through the collar and bung;

fusing the collar to the pipe; and

bonding the leak proof bondable material to the exposed surfaces of the assembled coupling and wall of the sump.

21. A method as claimed in claim 20 wherein at least one washer is welded or leak tight bonded to the sleeve.
22. A method as claimed in claim 20 or 21 wherein the collar includes an electro-fusion wire and the step of fusing the collar to the pipe involves energising the electro-fusion wire with an electrical current sufficient to cause local melting and fusion at the pipe/collar interface.
23. A method as claimed in claim 20 or 21 wherein the collar includes an induction heating element and the step of fusing the collar to the pipe involves inducing an electric current in the induction heating element sufficient to cause local melting and fusion at the pipe/collar interface.
24. A method as claimed in claim 21 or 22 wherein the fusion step involves sonic welding or socket fusion.